

We Claim:

1. An ink jet printhead chip that comprises
a substrate;
drive circuitry positioned in the substrate; and
5 a plurality of nozzle arrangements positioned on the substrate, each nozzle arrangement comprising

nozzle chamber walls and a roof wall that define a nozzle chamber and an ink ejection port in the roof wall in fluid communication with the nozzle chamber;

10 an ink pusher that is operatively positioned with respect to the nozzle chamber and is displaceable through a range of between 1 micron and 5 microns to eject ink from the ink ejection port; and

an actuator that is connected to the drive circuitry and the ink pusher to displace the ink pusher on receipt of an electrical signal from the drive circuitry.

- 15 2. An ink jet printhead chip as claimed in claim 1, in which the ink pusher is displaceable through a range of between 1.5 microns and 3 microns.

3. An ink jet printhead chip as claimed in claim 1, which is the product of a MEMS fabrication technique.

- 20 4. An ink jet printhead chip as claimed in claim 3, in which each ink pusher is in the form of a paddle member that is positioned in the nozzle chamber to span the nozzle chamber.

- 25 5. An ink jet printhead chip as claimed in claim 4, in which each actuator includes an actuator arm that is fast with the substrate at one end and attached to the paddle member at an opposed end, the actuator arm incorporating a thermal bend mechanism that is configured to deflect when heated by said electrical signal from the drive circuitry to displace the paddle member.

6. An ink jet printhead chip as claimed in claim 5, in which each thermal bend mechanism includes a portion of the actuator arm that is of a material having a coefficient of thermal expansion which is such that the material is capable of thermal expansion to an extent sufficient to perform work and an electrical heating circuit positioned on said portion of the actuator arm to heat a side of said portion so that said portion experiences differential thermal expansion resulting in deflection of the actuator arm and the displacement of the paddle member.

7. An ink jet printhead chip as claimed in claim 3, in which the roof wall defines the ink pusher.

8. An ink jet printhead chip as claimed in claim 7, in which each actuator includes an actuator arm that is fast with the substrate at one end and attached to the roof wall at an opposed end, the actuator arm incorporating a thermal bend mechanism that is configured to deflect when heated by said electrical signal from the drive circuitry to displace the roof wall towards the substrate.

9. An ink jet printhead chip as claimed in claim 8, in which the actuator arm is of a conductive material having a coefficient of thermal expansion which is such that the material is capable of thermal expansion to an extent sufficient to perform work, a portion of the actuator arm defining a heating circuit which is configured to expand thermally on receipt of said electrical signal, said portion of the actuator arm being positioned so that the actuator arm is deflected towards the substrate upon such deflection.